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no other species, I have after long hesitation decided to put it here. This in view of the well-known fact that the number of florets in the Compositæ frequently varies. The Syn. Flora puts *F. Contrayerba* under species with three-to-five-flowered heads, while the Missouri plant has them five-to-eight-flowered. Further, the typical plant is said to have "ligule not exceeding disk or wanting;" in this plant the ligule does exceed the disk flower, as stated. It would certainly seem possible, and probable, that this character might be subject to the same variation as the number of florets. Rather than make it a new species, therefore, or even a new variety, I have assumed that the assigned distinguishing characters must be subject to variation, and that the Missouri plant is still this species.

JOHN M. HOLZINGER.

U. S. Dept. Agric.

Specimens of Haloragææ desired. The subscriber being engaged in a special study of the North American Haloragææ, wishes to examine plants of the family from all parts of the country, and will be greatly obliged to any of his correspondents or other botanists who will supply him with specimens.

Columbia College, Feb. 24.

THOMAS MORONG.

Phlox bifida, again. Since the appearance in the November number of the BULLETIN of my note entitled, "Geographical Distribution of *Phlox bifida*," I have received specimens and communications which go to show that it has a more extended range than has been assigned to it. I have received specimens from J. J. Davis, of Racine, Wis., who informs me that they were collected on the sandy banks of Cedar River, at Vinton, Ia., where it grew abundantly. Prof. Beal, of Agricultural College, Mich., has sent me specimens collected by C. F. Wheeler the past season, on the shore of Klinger Lake, St. Joseph Co., Mich. As yet I have received no confirmation of a Missouri habitat. I would be glad to hear from any botanist who knows of its existence in that State.

FRANK E. McDONALD.

Review of Foreign Literature.

Leitfaden der Botanischen Mikroskopie. Wilhelm Behrens. Braunschweig Harald Bruhn, Oct. 1890.

It may be desirable to call the attention of the readers of the

BULLETIN to a new book in technique for beginners in microscopic botany, by W. Behrens, which has recently been issued in Germany. The first eighty-three pages discuss, in a very readable manner, and with excellent illustrations, the simple and compound microscopes, the polariscope, spectroscope, methods of measuring, of drawing and photographing microscopic objects.

In order to present these subjects intelligently to the reader, the book is introduced by a discussion of the phenomena of light. The lenses and objectives are well illustrated, both in piece and in section, so that any one can easily understand their workings.

This is equally true of all the accessory apparatus. The remaining one hundred and twenty-five pages discuss, fully enough for all beginners, the better methods of preparing, hardening, staining, and preserving materials for microscopical examination.

Something of the care with which the minor details are looked after may be judged from the fact that over ten pages are devoted to careful directions concerning the selection and sharpening of knives, and methods of holding the same in free-hand cutting.

Directions are given for collecting, cultivating when necessary, hardening, fixing, bleaching, and macerating different kinds of tissues and material for the microscope. Also full instructions for making permanent mounts of various kinds.

Methods of embedding in glycerine-jelly, gum-arabic, celloiden, paraffin, and transparent soap, are all fully and explicitly given. Even some of the foreign bodies which are most likely to find their way into microscopic preparations, are discussed and illustrated.

The merits of this book are, first, that it gives the student directions about many minutiae not generally spoken of in such books, but on points always sure to trouble the learner. To illustrate: on the use of the fine adjustment, which even advanced students sometimes neglect to their great disadvantage; or on the manipulation of the light for different effects, often not understood by even those who are far advanced in work. The instruction on this point, i. e. the positions of the mirror, the handling of the diaphragms, and the parts of the Abé condenser,

is of greatest importance to any student of microscopy. The directions for free-hand cutting will prove valuable for such as have not had the advantage of good instructors.

Second, that in the directions for preparing and preserving material, the author has given a judicious selection of the best methods and solutions, omitting a great mass of formulæ and recipes, which only confuse the beginner. Such methods, formulæ, and solutions as have been given, have all been tried by the author and found to work well.

The book would make a valuable manual for our young students of botany were it translated just as it stands. It would give them in the hand the most recent methods for the manipulation of microscopic objects; which knowledge now must be picked up wherever it can be found.

W. P. WILSON.

Biographical Index to British and Irish Botanists. James Britten and G. S. Boulger. (Journ. Bot. 1888-1890).

This very useful index, published in the numbers of the Journal for the last three years, is now about completed. It consists of a list of all persons residing in the British Islands who have been at all prominent in the science, including collectors and patrons of Botany. The date and place of birth and death, the place of burial, chief titles, dates of election to the Linnæan or Royal Societies, with references to sources for further information, as the following sample will indicate.

SHUTTLEWORTH, ROBERT JAMES (1810-1874): b. Dawlish, Devon, Feb. 1810; d. Hyères, 19th April, 1874. Captain, 1st Regiment, Duke of Lancaster's Own, 1833. F.L.S., 1856. Orig. memb. B.S.Ed. Conchologist and critical botanist. Resided many years at Berne. 'Excursion in the Valais,' Mag. Zool. Bot. 1838. Had large herbarium, now in Herb. Brit. Mus. (see Journ. Bot. 1878, 179). Jacks. 158; R.S.C. v. 681; Trans. Bot. Soc. Ed. xii. 203; Bull. Soc. Bot. France, xxx. cxxxi.; Whittle, Hist. Preston, ii. 235; Journ. de Conch. xxii. 92. *Shuttleworthia* Meisn.=*Verbena*.

The authors now propose to issue the work as a reprint, and ask for subscriptions at four shillings per copy, bound in cloth, the

list being brought down to January, 1891, and considerable information added to that already printed in the Journal. While the list is of not quite the importance to American botanists that it is to English there is so much matter of direct application to our own Botany that it really ought to be in the hands of all. We are so much interested in the success of this project that we will receive subscriptions to the work at \$1 per copy, payments to be made when the book is received. N. L. B.

Index to Recent Literature relating to American Botany.

Actinella (Hymenoxis) Texana, n. sp. John M. Coulter and J. N. Rose. (Bot. Gaz. xvi. 27, 28).

Algæ and Mosses. The Geological Work of. W. H. Weed. (Am. Geol. vii, 48, 55).

This is in the nature of an abstract of the monograph upon the subject prepared by the author and published in the Ninth Ann. Rept. U. S. Geol. Surv., previously reviewed in the BULLETIN.

Apical Growth in the Roots of Osmunda and Botrychium, —Notes on the. D. H. Campbell. (Bot. Gaz. xvi. 37-43, Pl. v).

Asplenium Filix-fœmina as a Tree Fern. Katharine Brandegee. (Zoe, i. 293-295).

Catalogue of the Anthophyta and Pteridophyta of Ames, Iowa. A. S. Hitchcock. (Trans. St. Louis Acad. Sci. v. 477-532; reprinted "Contributions from the Shaw School of Botany," No. 7).

This is one of the most carefully prepared and valuable local floras ever published, giving the results of the author's studies in the vicinity of Ames during the past seven years. Localities for the rarer species are given in detail. The principle of using the earliest specific name has been closely adhered to, the original author being cited in parenthesis. Many critical and very useful notes on nomenclature and determination of species are given. Several old names are here first taken up, as follows: *Anemone patens*, L. var. *hirsutissima* (Pursh), for var. *Nuttalliana*, A. Gray; *Anemone Hepatica*, L. var. *acuta* (Pursh), for *Hepatica acutiloba*, DC.; *Viola palmata*, L. var. *obliqua* (Hill), for var.